L0310000000 – Cook County
LAKE CALUMET SMELTING COMPANY
ILN000509228
HRS/SF

CERCLA
Preliminary Assessment

Illinois Environmental
Protection Agency

SIGNATURE PAGE

Title: CERCLA Preliminary Assessment for Lake Calumet Sanitation Company

Preparer: Kenneth W. Corkill, Project Manager, Office of Site Evaluation, Illinois Environmental Protection Agency

K W. Corkill — Signature

9-12-06 — Date

Reviewer: Tom Crause, Office Manager, Office of Site Evaluation, Illinois Environmental Protection Agency

Signature

9/14/06 — Date

Approval: Laura J. Ripley, Environmental Scientist, United States Environmental Protection Agency, Region 5

Laura J. Ripley — Signature

03/20/2008 — Date

The approval signatures on this page indicate that this document has been authorized for information release to the public through appropriate channels. No other forms or signatures are required to document this information release.

PRELIMINARY ASSESSMENT

for:

LAKE CALUMET SMELTING COMPANY
CHICAGO, ILLINOIS

ILN000509228

PREPARED BY:
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF LAND
FEDERAL SITE REMEDIATION SECTION
SITE ASSESSMENT UNIT

SEPTEMBER 8, 2006

PRELIMINARY ASSESSMENT
LAKE CALUMET SMELTING COMPANY

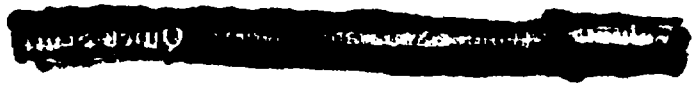
TABLE OF CONTENTS

LQ Ripley 03/20/2008

Figures and Tables

APPENDICIES

[redacted] typing 03/20/2008



1.0 INTRODUCTION

INTRODUCTION

On September 30, 2005, the Illinois Environmental Protection Agency's (IEPA) Office of Site Evaluation (OSE) was tasked by the U.S. Environmental Protection Agency (USEPA) Region V to conduct a Preliminary Assessment (PA) of the former Lake Calumet Smelting Company facility located in Chicago, Illinois. The PA was performed under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) commonly known as Superfund.

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Part 300) requires a Preliminary Assessment be performed on all sites entered into the Comprehensive Environmental Response, Compensation and Liability System (CERCLIS). If, through the initial investigative phase, the determination is made that the site is National Priority List (NPL) caliber, the site will progress through the Superfund process. A sampling plan to accommodate removal and site assessment needs, as well as initial remedial needs will be developed during future investigations. The need for site sampling will be based on a reasonable understanding of the site in order to assure that adequate data will be collected for the removal assessment and the preparation of the Hazard Ranking System (HRS) score. Upon completion of the data gathering, there will be a determination of whether the site should be forwarded within the Superfund process, either through the remedial or removal programs. Based on the preliminary HRS score and removal program information, the site may be designated as No Further Remedial Action Planned (NFRAP), Referred to Removal - No Further Remedial Action

Planned, or it could require additional sampling to determine if the site should be considered for potential inclusion on the NPL.

Lake Calumet Smelting Company (ILN000509228) was initially investigated by the IEPA in response to a USEPA Region V request to investigate former lead smelting businesses within the City of Chicago. IEPA personnel conducted a Pre-CERCLIS Screening Assessment (PCS) of this site on August 10, 2004. The PCS Assessment recommended that the former Lake Calumet Smelting Company site be further investigated. As a result of this recommendation, Lake Calumet Smelting Co. was placed on the Comprehensive Environmental Resource Compensation and Liability Inventory System (CERCLIS) list in October 2004 as a site discovery. The site was placed on CERCLIS in response to concerns that past site activities may have resulted in releases of heavy metals onto the ground around the facility, and thereby entering the environment. The substances had the potential to enter the environment through four environmental pathways; groundwater, surface water, soil exposure, and air releases potentially endangering the life and health of human populations, wildlife and the environment. The potential for contamination exists, both, onsite and at nearby off-site locations. This potential stems from the following factors: the company operated from the mid 1940's to the mid or late 1960's as a zinc smelter and smelter of secondary lead, tin, babbitt, and solder; the quantity of waste is unknown; unknown waste disposal practices; and residential areas are within one-half mile (2640 feet) of the subject property.

The Preliminary Assessment is being conducted to collect information sufficient to support a decision regarding the need for further action under CERCLA. The assessment will

investigate and discuss the type of site, operational history, the four environmental pathways (groundwater migration, surface water migration, soil exposure and air migration), and the environmental hazards associated with the site. No Resource Conservation and Recovery Act (RCRA) implications or actions are associated with this site.

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION

On April 25, 2006 personnel from the Illinois Environmental Protection Agency's Office of Site Evaluation conducted a Preliminary Assessment of the former Lake Calumet Smelting Company facility located in Chicago, Illinois. Lake Calumet Smelting Company is an inactive, abandoned metal producing operation located at 11901 S. Champlain Ave., Chicago, Illinois, Township 37 North, Range 14 East, Section 22, Latitude 41.678, Longitude -87.606, in Hyde Park Township, Cook County (see Figures 1 & 2). The former Lake Calumet Smelting Company was located at the southern end of the City of Chicago, approximately 3000 feet south of E. 115th Street. Interstate 94 is visible approximately 1500 feet east of the facility.

The subject property is situated in an urban/industrial setting within the City of Chicago. Bordering the property on the north is 119th Street (unpaved and currently not in use as a street), beyond which is an open mowed grass field that is part of the Sherwin-Williams Paint Co. property; on the east is bare, filled, open property that is a portion of a storage tank container company, beyond which is I-94; on the south is bare, filled, open property that is another portion of the storage tank container company; and to the west is S. Champlain Ave. (unpaved and currently not used as a street), beyond which are railroad siding tracks and an unknown manufacturing company (Figure 3). Information obtained from the Cook County Assessors Office indicates that the facility's former structure, driveway and parking areas occupy a rectangular shaped property on approximately 5.7 acres of land at the mentioned location.

According to a 1936 – 1950 Sanborn Fire Insurance Map, the former facility consisted of a two story main building with two one story rooms attached to the south and a one level storage room attached to the west. What appears to be a separate, small smelting building containing a vat was located south and adjacent to the storage room. At some point between the late 1950's to late 1960's, Lake Calumet Smelting ceased doing business. Based on United States Geological Survey (USGS) aerial photography from 1998 and 2002 and observations of IEPA personnel during the April 25, 2006 site reconnaissance portion of the PA, all that remains of the former structures is a portion of a smoke stack. All other structures have been razed.

Currently, the site consists of a large concrete building foundation and floor with the remains of a smoke stack still present. It also appears that the demolished remains of cinder block, brick, and wood structures are present on the northwest quarter of the foundation and floor. No other former facility structures are present or visible. Chainlink fencing topped with barbed wire surrounds the former facility. Also present around the perimeter of the facility are young to mature trees, overgrown brush and weeds, all growing in gravel, cinder and dirt fill. Surrounding property on the east, south and west appears to be filled to a level which is higher in elevation than the former Lake Calumet Smelting property. The property to the north appears to be level with, or slightly lower in elevation than, the former Lake Calumet Smelting property.

The terrain of the property is flat with partially to heavily vegetated areas in the southeast corner, and in the extreme northwest quarter of the facility, respectively. Vegetated areas consist of various types and sizes of grasses, weeds, and trees consistent with the vegetation along the perimeter of the facility. Grass and weeds associated with the vegetated areas are sparse. Tree

and brush growth is fairly dense.

The former Lake Calumet Smelting Company property is situated in a light to medium industrial area approximately one half mile east of the nearest residential neighborhood. No residential dwellings, schools or daycare facilities are within two hundred feet of the property. Within four miles of the property, land use consists primarily of residential and manufacturing/light to medium industrial with some commercial/retail also scattered throughout. Seven grade schools are within one mile (5280 feet) of the property. All schools are located north, northwest, west, and southwest of the property at a distance between one-half mile (2640 feet) and one mile.

The property can be accessed by vehicle from the south through a gate in the south fence. Access by pedestrian traffic can be gained from the south through the gate, through an area of fence at the southwest corner of the property that has been crushed by falling tree limbs, and through a cut in the fence approximately twenty feet north of the southwest corner. Fencing is present around the entire perimeter of the property. However, breaches in the fence, other than the ones already noted, may not have been observed during the site reconnaissance.

The surface water runoff route for this property consists of runoff flowing into low areas on the property and ponding, or flowing toward the north side of the property where there appears to be a low area immediately off-site. The low area appears to hold moisture most of the time due to the existence of a heavy growth of Phragmites. Runoff from this location appears to trend toward the east (Lake Calumet), however a definitive route could not be determined. No city street storm drains, curb storm drains, or area drains could be found near the facility.

Moisture ponding on-site either percolates into the soil or evaporates.

2.2 SITE HISTORY

An investigation conducted at the State of Illinois Archives in Springfield, revealed no information on the company. There was no information identifying incorporation or dissolution dates of the company. The Cook County Clerks office did not have any record of Lake Calumet Smelting Company. A search of Sanborn Fire Insurance Maps, located at the Illinois State Library, indicated that the land bordered by unpaved 119th St. on the north, unpaved S. Champlain Ave. (formerly Stephenson Ave., until about 1940) on the west, a small boat turn-around area east (excavated to connect to Lake Calumet), and open ground on the south was originally the site of the Illinois Terra Cotta Lumber Company. A Sanborn Map (Appendix B) from 1897 indicates that the company had structures constructed over most of the approximately 5.7 acres delineated above. Structures included an office, eleven kilns, drying rooms, mechanical shop, engine room, and others. Also on the property was a storage yard for lumber and a storage structure for saw dust. No other information was found to indicate when this company began operating at this location. At some point between 1940 and 1950 Illinois Terra Cotta Lumber Company ceased business and some of the site structures were either razed or altered during establishment of Lake Calumet Smelting Company. Sanborn Fire Insurance Maps spanning a time period from 1936 – 1950 indicate Lake Calumet Smelting was in existence. However, the Metal Industry Directory, Standard Metal Directory 1940 Edition has no listing for Lake Calumet Smelting. Also, an aerial photograph taken in 1939/1940 (Figure 4) indicates Illinois Terra

Cotta Lumber Company was still occupying the property. This information indicates that at some time between 1940 and 1950 Lake Calumet Smelting Company was established. Exactly how long the company was in existence is not clear. However, according to the Metal Industry Directory, Standard Metal Directory 1963 – 1964 Edition, the Lake Calumet Smelting Company was listed as a zinc smelter, smelter of secondary lead, tin, babbitt, and solder and a wholesale dealer that specialized in scrap metal, located at 651 E. 119th, Chicago, Illinois (range of street addresses along E. 119th St. may be seen in Appendix B on 1936 – 1950 Sanborn Map). Material listed as produced were bulk units of babbitt, solder, lead, tin, zinc and die cast metal available for shipping to customers. To produce these metals the process consumed a variety of scrap; bell metal, die cast scrap, metal clippings, castings and turnings, and wire. No known metal fabrication processes were carried out at this facility. No ferrous metals were utilized or produced. It is not known when the address of the Lake Calumet Smelting Company changed to 11901 S. Champlain Ave, which is the present address, listed by USEPA resulting from a study by William P. Eckel, 2001, entitled The Secondary Lead Smelting Industry (range of street addresses along S. Champlain Ave. may be seen in Appendix B on 1936 – 1950 Sanborn Map). There is no information available to indicate why the address of Lake Calumet Smelting was changed.

According to 1897 & 1936 - 1950 Sanborn Fire Insurance Maps some entire structures and portions of other structures built on the Illinois Terra Cotta Lumber Co. were later utilized by the Lake Calumet Smelting Company. Structures utilized on the Lake Calumet property consisted of three brick buildings. The function of each was listed as storage, factory and vat

facilities. Each was constructed of brick with steel frame and steel beam roof supports. The floors were concrete and the roofs were constructed of concrete over steel beams. The inside curtain walls were brick. No information has been found indicating when operations ceased at either of the facilities formerly occupying this property. At this writing research of property ownership records conducted at the Cook County Assessors office failed to reveal said records. Also at this writing no tax records have been found.

2.3 REGULATORY STATUS

The property is not subject to Resource Conservation and Recovery Act (RCRA) corrective action authority. Information currently available does indicate that the site is under the authority of the Atomic Energy Act (AEA), Uranium Mine Tailings Action (UMTRCA), or the Federal Insecticide Fungicide or Rodenticide Act (FIFRA).

3.0 PRELIMINARY ASSESSMENT ACTIVITIES

3.1 RECONNAISSANCE ACTIVITIES

A CERCLA pre-remedial site reconnaissance and evaluation was conducted on April 25, 2006, by personnel of the Office of Site Evaluation of the Illinois Environmental Protection Agency. A site reconnaissance of the Lake Calumet Smelting Company property and the surrounding area was conducted to determine the physical property boundaries and survey the properties at its perimeters. The survey of the surrounding area was done to determine land usage of the neighboring properties as well as any pathway or receptors that potentially may be affected by the site. As mentioned, the site was observed to be flat, with some areas overgrown with vegetation, particularly at the property perimeter, in the southeast corner of the property and in the majority of the northwest quarter of the facility. As indicated in Section 2.1, chain link fence surrounds the facility. At least two breaches exist in the fence at the southwest corner. The site may be accessed at this location. Access may also be gained through the gate in the south fence due to its inability to close. Although the facility is only about one half mile from the nearest residential area and may be accessible by the public, it is not in a highly accessible location, being separated from the residential areas by major thoroughfares, an interstate highway and various railroad tracks. In addition, the property does not appear to have any recreational draw and it is not located between a school and a neighborhood where students would be able to cut across the property and potentially be exposed to site soil and/or airborne dust. In light of this, however, there is evidence of human activity on the property in the form of foot prints,

discarded soft drink cans and bottles, bicycle tire tracks, off-road motorcycle tracks, etc. No structures remain standing, with the exception of the former facility's smoke stack. At various locations around the facility small piles of soil or fill material are present. Other piles consist only of bricks, while others consist of brick, concrete blocks, and wood. Along the north edge of the concrete floor and foundation footprint of the former storage building a pile of old railroad ties is present. At one location in the southwest portion of the facility two partially crushed 55-gallon steel drums were noted. The drums were in various states of deterioration. No material remained inside the drums, nor did it appear to have spilled onto the ground. Two intact poly drums found on their sides in the southeast portion of the facility contained a gray powder material that had also spilled onto the ground. In general the soil/fill surrounding the concrete floor and foundation includes cinders, glass, and debris of various types. Further discussion of site details and site description have been covered in Section 2.1 of this report.

3.2 FIELD SCREENING ACTIVITIES

During a previous visit to the former Lake Calumet Smelting Company property on August 10, 2004, personnel from the IEPA Office of Site Evaluation collected field based soil and debris data with a Niton 700 Series X-Ray Fluorescence unit (XRF). Nine soil locations were analyzed around the outside of the concrete floor, foundation and surrounding area within the property boundary. In addition to the nine soil locations, one location on the concrete floor of the former structure was analyzed. A variety of material deposited on the concrete prompted analysis of the floor. An aerial photograph of the Lake Calumet Smelting property and

surrounding area has been supplemented with all XRF sample locations (Figure 5). No particular pattern of contamination emerged from analysis of the sample results, other than contamination is throughout the property and all locations analyzed are well above USEPA Removal Action Levels (RAL's) for both, residential and industrial/commercial properties. Removal Action criteria was obtained from USEPA's Hazard Evaluation Handbook - A Guide to Removal Actions, Fourth Edition, October, 1997. Contamination was not limited to one particular area, such as immediately adjacent to the former buildings, but was also noted at various locations away from the former structures. Additional information regarding detected contaminants is presented in Section 5.3 of this document as well as in a summary of all XRF readings presented in Table 1 (Residential) and Table 2 (Industrial/Commercial).

3.3 SITE REPRESENTATIVE INTERVIEW

The investigation to find a site representative for the former Lake Calumet Smelting Co. has been unsuccessful, therefore, no site representative interview is possible.

4.0 SOURCE CHARACTERISTICS

4.1 POTENTIAL CONTAMINATED SOIL (LAKE CALUMET SMELTING PROPERTY)

Through various investigative avenues, it has been determined that the former Lake Calumet Smelting Company was classified as a smelter of zinc, smelter of secondary lead, tin, babbitt and solder, and a wholesale dealer in scrap metal. Prior to field evaluation, the very nature of the former business caused concern regarding potential soil contamination throughout the property. Subsequent review revealed that all buildings, with the exception of remnants of a smoke stack, had been razed and various piles of debris and demolition waste remain on the property. Through field based soil and debris evaluation, with the IEPA's XRF unit, soil contamination was detected not only on the floor of the former building, but also detected at various locations away from the former structures, throughout the property (lead ranged between 7480ppm – 768,000ppm, zinc 5110ppm – 146,000ppm, and arsenic less than limit of detection – 36,300ppm). All locations analyzed contained one or more constituents, related to lead and zinc smelting, with concentrations well above USEPA RAL's. As Lake Calumet Smelting was the focus of this investigation in determining concentration of contaminants on this site and determining potential impact of the site on human targets and/or the environment, no XRF background analysis was conducted in the surrounding area. Evaluation of the surrounding area will be carried out during future site investigations.

5.0 MIGRATION PATHWAYS

5.1 GROUNDWATER

The former Lake Calumet Smelting Company site is situated 1000 – 1500 feet west of Lake Calumet on relatively flat terrain of surficial fill that covers the Lake Calumet area. Various thicknesses of fill comprise the land surface around Lake Calumet. Surface elevation of the facility is approximately 590 feet above mean sea level. Borings and well logs completed at numerous locations and at various times during the 20th Century have indicated fill ranging from approximately two and one half feet thick as near as 500 feet west of Lake Calumet to as much as twenty and thirty feet thick approximately 3000 feet east of the Lake. A general pattern of ten feet or greater of fill is known to exist immediately adjacent to Lake Calumet. Based on these logs and supporting information fill beneath the facility is approximately eight to ten feet thick. The two main sources of fill in the Lake Calumet area were slag waste from steel production and dredgings from the deepening and channelization of the Calumet River system. Significant amounts of other solid wastes were also used as fill, such as household trash, fly ash, solid industrial wastes, and demolition debris including bricks, wood, metal scraps, concrete, and cinders. At this facility it appears that waste material from the secondary smelting of lead has been added to the fill previously in place.

Geology of the area consists of unconsolidated lake sediments and glacial tills overlying Silurian dolomite bedrock. The bedrock surface is approximately 65 feet below ground surface beneath the facility and slopes toward the east at about five feet per mile. A few dolomite

outcrops exist in the area as evidenced by the Stony Island area three miles north of the facility. The deposits overlying the dolomite generally consist of two till members of the Wedron Formation. The lower member, the Lemont Drift, ranges in thickness from 0 – 60 feet and is known to be approximately 15 feet thick beneath the facility. The upper member, the Wadsworth Till, ranges in thickness from 0 – 40 feet. Beneath the facility the Wadsworth Till is known to be approximately 40 feet thick. Both of these units, the Lemont Drift and the Wadsworth Till, are described as gray silty clays with traces of sand and gravel. The upper surface of the till also slopes toward the east, in a similar manner and rate as the bedrock. The unconsolidated lake sediments above the till are of the Equality Formation comprised of beach sands and lacustrine sands, silts, and clays deposited on the floor of Lake Michigan during the post-glacial period following the major drop in water level as the lake went from the glacial Lake Chicago stage to the early Lake Michigan stage. Large sand deposits were brought into the area east and south of Lake Calumet by currents and wave action caused by retreating glaciers. These sand deposits are known as the Dalton Sand Member. The sand pinches out toward the western portion of Lake Calumet as this area was once near the former shoreline of glacial Lake Chicago. The sand in the area beneath the Lake Calumet Smelting facility eroded and was replaced by the Wedron till Formation.

The direction of groundwater flow in the Lake Calumet area is difficult to determine due to the variety of fill material and the intense human activity in the area. However, the Illinois State Water Survey (ISWS) has determined that the general direction of flow is in a radial pattern toward Lake Calumet. During high water episodes groundwater may flow away from the lake

area. According to ISGS and ISWS information, depth to groundwater, in wells finished in the drift and till, in the Lake Calumet area is approximately 35 feet below ground surface. Depth to groundwater in wells finished in the shallow dolomite bedrock aquifer can be as shallow as 60 feet below ground surface.

Most area residents and businesses obtain their drinking water from the City of Chicago which utilizes Lake Michigan as the sole source of drinking water for the metropolitan area. Surface water intakes are located in cribs placed approximately two miles from shore in Lake Michigan. Water is pumped to the main filtration plant north of Navy Pier prior to distribution to the metropolitan water systems. There are, however, a few individuals beyond two and one half miles from the former Lake Calumet Smelting property still using ground water wells. These private wells utilize the shallow dolomite aquifer for drinking water supplies. The ISWS database indicates that there are no public water supplies within four miles of the former Lake Calumet Smelting property. Approximately 10 private wells exist within a four mile radius of the subject facility. While there is a potential for area groundwater to have been impacted it is unlikely that the surrounding population is being affected by this facility, as the nearest private drinking water well is approximately two and one half miles south of the facility and the general trend of groundwater flow from the facility area is east toward Lake Calumet.

Number of wells and users within 4-miles of Lake Calumet Smelting Company

Distance	Groundwater Wells	Private Well Population	Public Well Population
0 – ¼ mile	0	0	0
¼ - ½ mile	0	0	0
½ - 1 mile	0	0	0
1 – 2 miles	0	0	0
2 – 3 miles	4	11	0
3 – 4 miles	6	17	0

Population based on average persons per household (2.72 for Cook Co.) 2000 Bureau of the Census

5.2 SURFACE WATER

The surface water runoff route for this property is described as follows: any excess moisture caused by precipitation flows into low areas on the property resulting in ponding that either evaporates or percolates into the soil on site. If excess moisture runs off site it flows toward the north side of the property where there appears to be a low area immediately off-site. The low area appears to hold moisture most of the time due to the existence of a heavy growth of Phragmites. Runoff from this location appears to trend toward the east (Lake Calumet). Until further investigation defines the drainage route the potential exists for runoff to enter Lake Calumet. No city street storm drains, curb storm drains, or area drains could be found near the facility As indicated on the Lake Calumet USGS topographic map, Lake Calumet is 1000 – 1500 feet east of the facility. Additional perennial and/or intermittent waterways are present

within 1.5 miles of the former Lake Calumet Smelting property. However, no run off routes to these waterways have been observed that would transport surface water from the facility to a probable point of entry (PPE) into any nearby water body other than Lake Calumet. Therefore, it appears that there is a potential for release to the surface water pathway associated with this site.

According to the National Wetland Inventory Maps the nearest wetland to the former Lake Calumet Smelting Co. facility is located approximately 2340 feet southwest. This wetland is described as: palustrine, emergent, semi-permanently flooded environment (Figure 6).

A review of a Federal Emergency Management Agency Flood Insurance Rate Map for incorporated areas of the Lake Calumet area of Cook County (Panel # 170074 0120 B) indicates that the facility is located outside of the 500 year floodplain, a Zone C designation.

5.3 SOIL EXPOSURE

The soil exposure pathway appears to be the primary concern associated with the former Lake Calumet Smelting facility based upon information gathered during the August 10, 2004 and April 25, 2006 site visits and investigations. The facility is located in an urban setting of mixed light - medium industrial businesses with residential properties within one-half mile. While the property is fenced in an effort to deter trespassing, and there are no indications that the property is used for recreational purposes, there are however, several breeches in the fence (created by physical force) and a gate along the south property boundary that is unable to close and lock. Although the nearest residential neighborhoods are at a distance of one half mile and major

thoroughfares separate the facility from these neighborhoods there is a moderate probability that the property is used by neighborhood trespassers from time to time. It should be noted that because the facility does not have an abundance of vegetative cover and due to the detection of various heavy metal analytes, in excess of USEPA removal action criteria, on the soil surface and on the floor of the former facility structure, the risk of exposure to anyone disturbing the surface of the facility is greatly increased. Other than the heavy metal analytes detected on the property, there are no other known complaints of dumping, spills or incidents resulting in contamination of the soil and no visible signs of any anomalies. There have been no known reports or complaints of foul and/or noxious odors emanating from the former facility.

Because the former Lake Calumet Smelting property is located in a light – medium industrial area, USEPA Removal Action Levels (RAL's) for industrial/commercial properties will be used for evaluation of site conditions and potential for exposure of nearby workers (on adjacent property) or anyone disturbing the site soil. Analysis of XRF samples indicate the industrial/commercial RAL for lead (1000 mg/kg) is exceeded in all nine soil sample locations (#166 - #171and #173 - #175) and also at the one location (#172) on the floor of the facility's former structure. The RAL for zinc (1,000,000 mg/kg) is equaled or exceeded in one sample location (#169). The RAL for arsenic (6100 mg/kg) is exceeded in four soil sample locations (#166, #167, #169, and #175). Also, because the site is as close as one half mile from some residences, USEPA Removal Action Levels for residential properties are used to evaluate potential for exposure of area residents to contaminated soil. Analysis of XRF samples indicate the RAL for lead (400 mg/kg) is exceeded in all nine soil sample locations (#166 - #171and #173

- #175) and also at the one location (#172) on the floor of the facility's former structure. The RAL for zinc (230,000 mg/kg) is exceeded in one soil sample location (#169). The RAL for arsenic (230 mg/kg) is exceeded in all nine soil sample locations (#166 - #171and #173 - #175). Reference Figure 5 and Table 1 of this report for XRF sample locations and associated data.

Nearby population within one mile of the site

Distance	Population
On-Site	0
0 – ¼ mile	0
¼ - ½ mile	1000
½ - 1 mile	7000

Population based on average persons per household (2.72 for Cook Co.) 2000 Bureau of the Census

5.4 AIR ROUTE

During the April 25, 2006 reconnaissance a Foxboro Toxic Vapor Analyzer (TVA) was utilized to screen for volatile constituents in ambient air around the facility, air in the breathing zone, and air near building debris and drums. All readings registered at background levels of approximately 2.5 units under calm conditions. There are no records, reports or complaints on file of air releases from the facility or odors emanating from the facility. As mentioned previously, the facility has various types of vegetative cover, mainly at the perimeter of the property, that will assist in preventing some airborne migration of windblown particulates.

However, due to the majority of the property being devoid of vegetation (reference Figure 3 and Figure 5) and surface soil being of a powdery nature wind blown particulates will readily migrate from the facility. Due to the detection of various heavy metal analytes on the soil surface and on the floor of the former site structure, the potential for contaminated airborne particulates to be released via the air pathway is a concern.

Individuals potentially exposed to air-borne contaminants

Distance	Population
On-site	0
0 – ¼ mile	40
¼ - ½ mile	1050
½ - 1 mile	7200
1 – 2 miles	55,770
2 – 3 miles	124,800
3 – 4 miles	248,000

Population based on average persons per household (2.72 for Cook Co.) 2000 Bureau of the Census

6.0 SUMMARY

Lake Calumet Smelting Company was initially investigated by the IEPA in response to a USEPA Region V request to investigate former lead smelting businesses within the City of Chicago. IEPA personnel subsequently conducted a Pre-CERCLIS Screening Assessment (PCS) of this site. As a result of this investigation, Lake Calumet Smelting Co. was recommended for further evaluation and placed on the Comprehensive Environmental Resource Compensation and Liability Inventory System (CERCLIS) list as a site discovery. The site was placed on CERCLIS in response to concerns that past site activities may have resulted in releases of heavy metals onto the ground around the facility, and thereby entering the environment.

The investigations included collection of XRF soil samples throughout the former Lake Calumet Smelting property, including samples of unknown material on concrete flooring of the former facility building. The Removal Action Level for lead was exceeded at all ten XRF sample locations, the RAL for zinc was exceeded at one XRF location, and the RAL for arsenic was exceeded at nine XRF locations. Due to the site being adjacent to active businesses with workers in an outdoor environment and the facility being within one-half mile of residential neighborhoods, access to the facility and contact with contaminants are of concern. Further investigation is required to determine if there are other potential sources of contamination that may remain on the property resulting from potential improper waste disposal during the years the site was used as a smelter. The potential also exists that undiscovered underground storage tanks or undetected contaminants from the empty drums remain on the property.

The soil exposure pathway appears to be the primary concern associated with the former

Lake Calumet Smelting facility with the air pathway being a secondary concern. While the property is fenced there are, however, several breeches in the fence (created by physical force) and a gate along the south property boundary that is unable to close and lock allowing access to the site. The nearest residential neighborhoods are approximately one half mile from the site. The potential exists, as evidenced by the presence of foot prints, discarded soft drink cans and bottles, bicycle tire tracks, off-road motorcycle tracks, etc., that the property is used by neighborhood trespassers from time to time. Also, workers from adjacent businesses potentially have access to the property. Because the surface soil is of a powdery nature and the facility not having an abundance of vegetative cover the risk of exposure to anyone disturbing the surface of the facility is greatly increased. In addition, due to these conditions the potential for contaminated airborne particulates to be released via the air pathway is a concern.

Potential contamination of groundwater and surface water due to site conditions are of lesser concern based on geologic and topographic features within the surrounding area. Geologic conditions such as 65 feet of unconsolidated lake sediments and glacial tills overlying Silurian dolomite bedrock restrict migration of groundwater from the site. Topographic conditions such as the site being level, with the surrounding property on the east, south and west being filled to a level which is higher in elevation than the former Lake Calumet Smelting property prevents surface water migration from the site in those directions. The property to the north appears to be level with or slightly lower in elevation than the former Lake Calumet Smelting property. If excess moisture runs off site it flows toward the north side of the property where there appears to be a low area immediately off-site. One potential run off route has been

observed and/or found that may transport surface water from the facility to a probable point of entry (PPE) into Lake Calumet. In light of the potential runoff into Lake Calumet it appears that a release to the surface water pathway is a concern associated with this site.

7.0 REFERENCES

Bureau of the Census, County and City Data Book, 2000 U.S. Census Data.

Rockford Map Publishers, 1996, Land Atlas and Plat Book, Cook County, Illinois.

Roadcap, George S. & Kelly, Walton R., Shallow Ground-Water Quality and Hydrogeology of the Lake Calumet Area, Chicago, Illinois, Illinois State Water Survey, March, 1994.

Willman, H. B., et al., Handbook of Illinois Stratigraphy, Bulletin 95, pages 97 – 104, Illinois State Geological Survey, 1975.

State of Illinois, Department of Energy and Natural Resources, 1965, Photorevised 1973, Photoinspected 1977, Lake Calumet, Illinois - Indiana, 7.5 Minute Topographic Map.

State of Illinois, Department of Energy and Natural Resources, 1963, Photorevised 1973, Photoinspected 1978, Blue Island, Illinois, 7.5 Minute Topographic Map.

State of Illinois, Department of Energy and Natural Resources, 1968, Photorevised 1980, Calumet City, Illinois, 7.5 Minute Topographic Map.

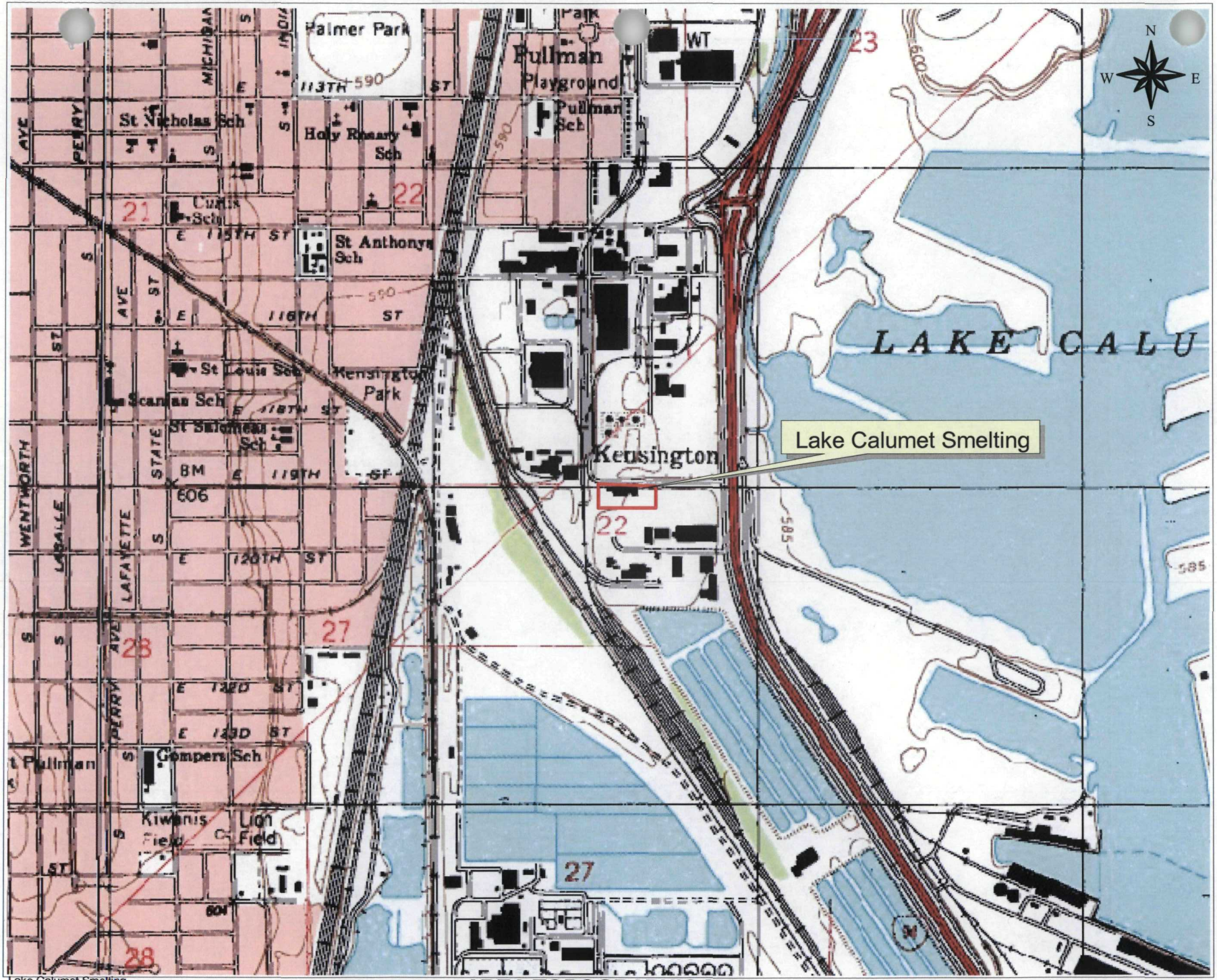
State of Illinois, Department of Energy and Natural Resources, 1993, Harvey, Illinois, 7.5 Minute Topographic Map.

FIGURES and TABLES

Lake Calumet Smelting

Site Location

Figure 1



Lake Calumet Smelting

AREA TOPOGRAPHIC MAP

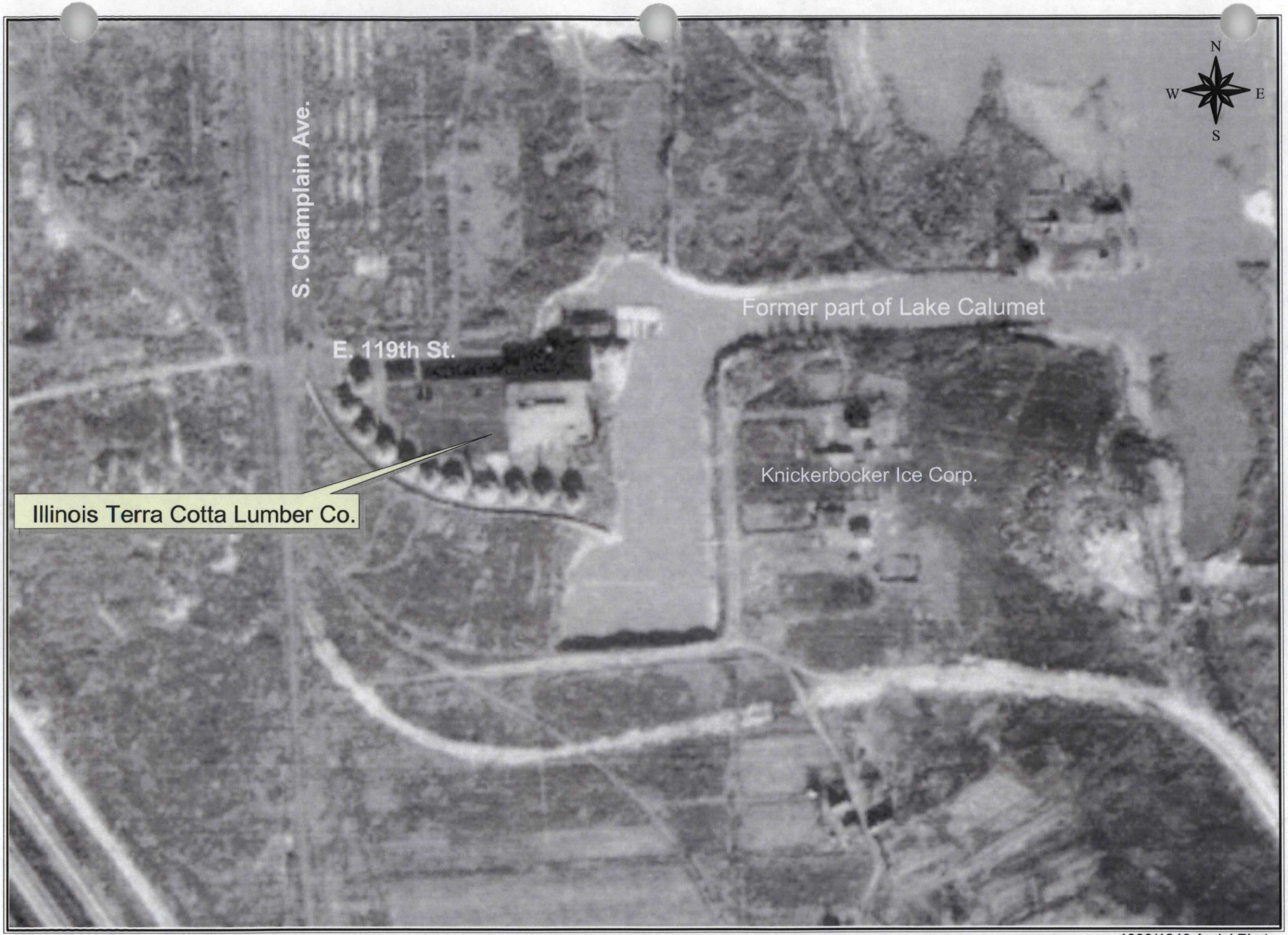
Figure 2

Lake Calumet Smelting

2002 Aerial Photograph

SITE AREA MAP

Figure 3



Illinois Terra Cotta Lumber Co. 1939/1940 Aerial Photo

Illinois Terra Cotta Lumber Company

Aerial Photograph

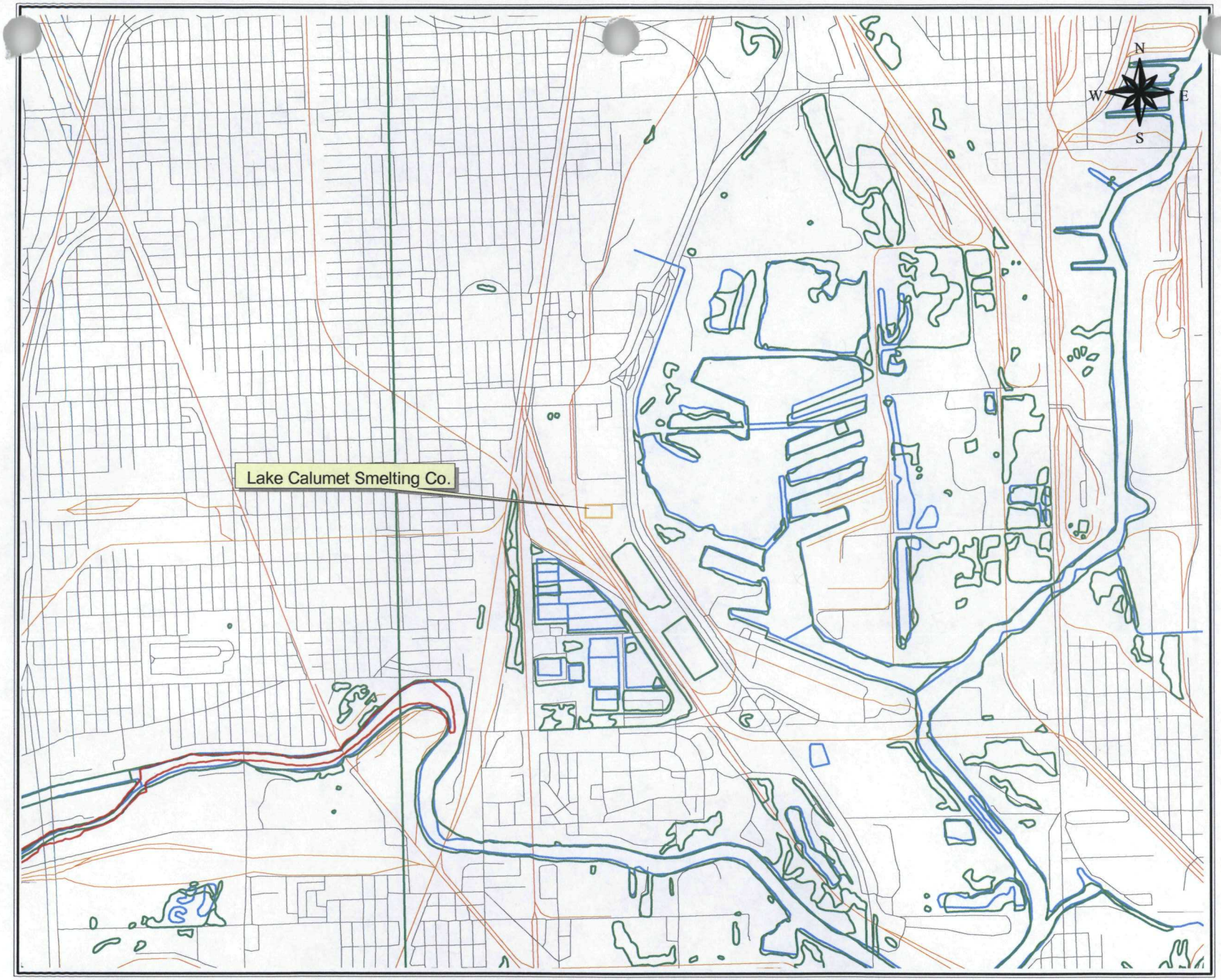
Figure 4

1998 Aerial Photograph

XRF Location

Lake Calumet Smelting Co.
&
XRF Locations 8-10-04

Figure 5



Flood Zones
Wetlands
Streams & Lake Outlines
Rails
Roads
Cook County Boundary

Wetland & Flood Zone Map

Figure 6

LAKE CALUMET SMELTING COMPANY

Chicago, Illinois

XRF Screening Data

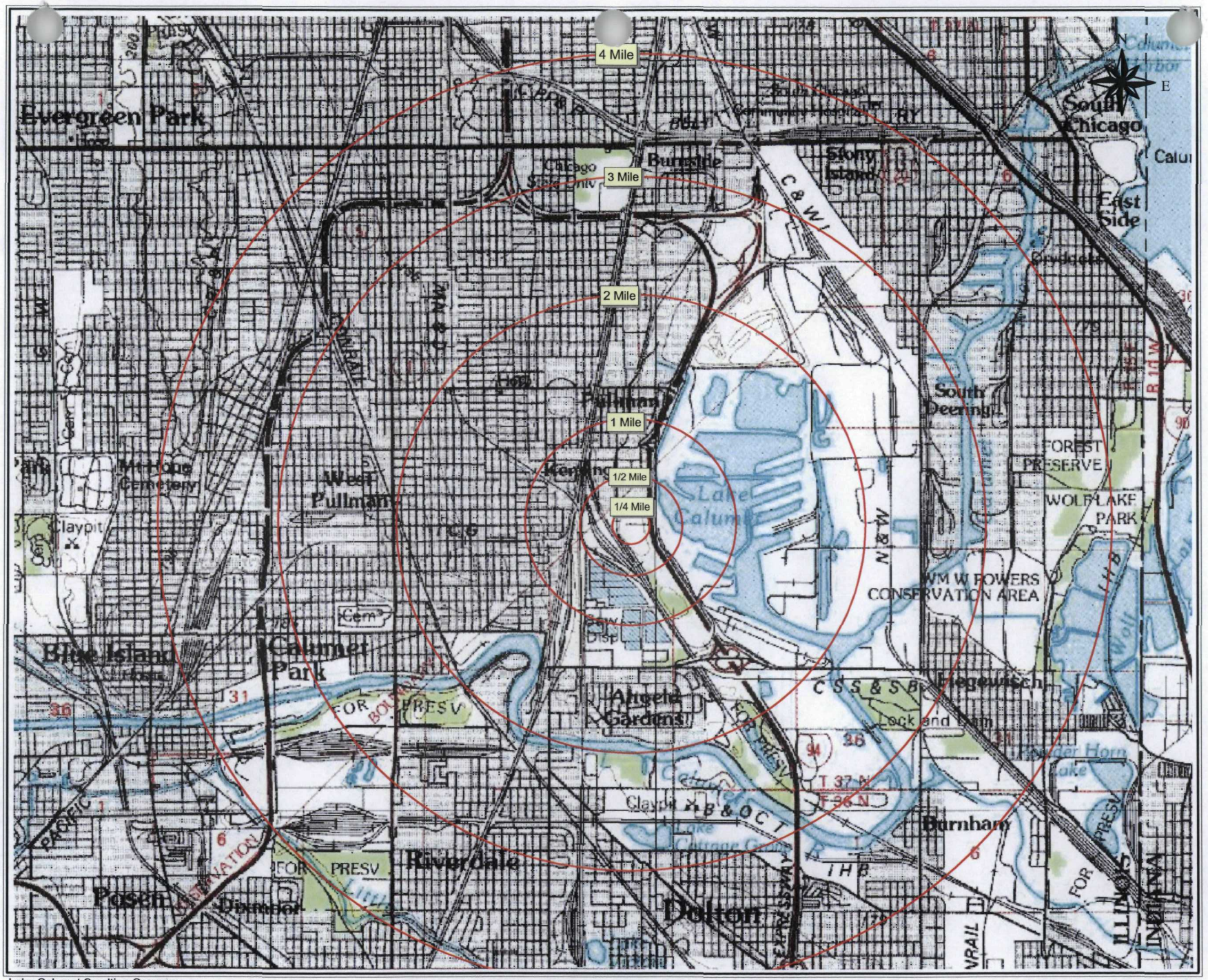
TABLE 1

XRF Reading Number	USEPA RAL's	166	167	168	169**	170	171	172*	173	174	175
Matrix		Soil	Soil	Soil	Powder	Soil	Soil	Concrete	Soil	Soil	Soil
Units	(mg/kg)***	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date		8/10/2004	8/10/2004	8/10/2004	8/10/2004	8/10/2004	8/10/2004	8/10/2004	8/10/2004	8/10/2004	8/10/2004
ANALYTE		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Lead	1000	768,000	189,000	72100	Above	88,600	7480	36,100	16,200	49,000	210,000
Zinc	230000	146,000	73,700	21,200	XRF	44,100	5110	30,400	10,200	22,800	133,000
Arsenic	230	36,300	6190	2160	Limits	1800	468	<LOD	521	1520	7420

- All XRF samples of the soil were collected from the soil surface. XRFsample collected on concrete floor surface was formerly within a building.
- * Indicates screening was done on a concrete floor covered with various material.
- **Indicates screening was of grey powder material spilled onto the soil surface from a poly drum.
- ***Residential RALs are being used for comparison due to the facilitys proximity to residential neighborhoods.
-<LOD = Less than limit of detection.
- Red highlighted results are above RAL's.

APPENDIX A

4 - Mile Radius Map



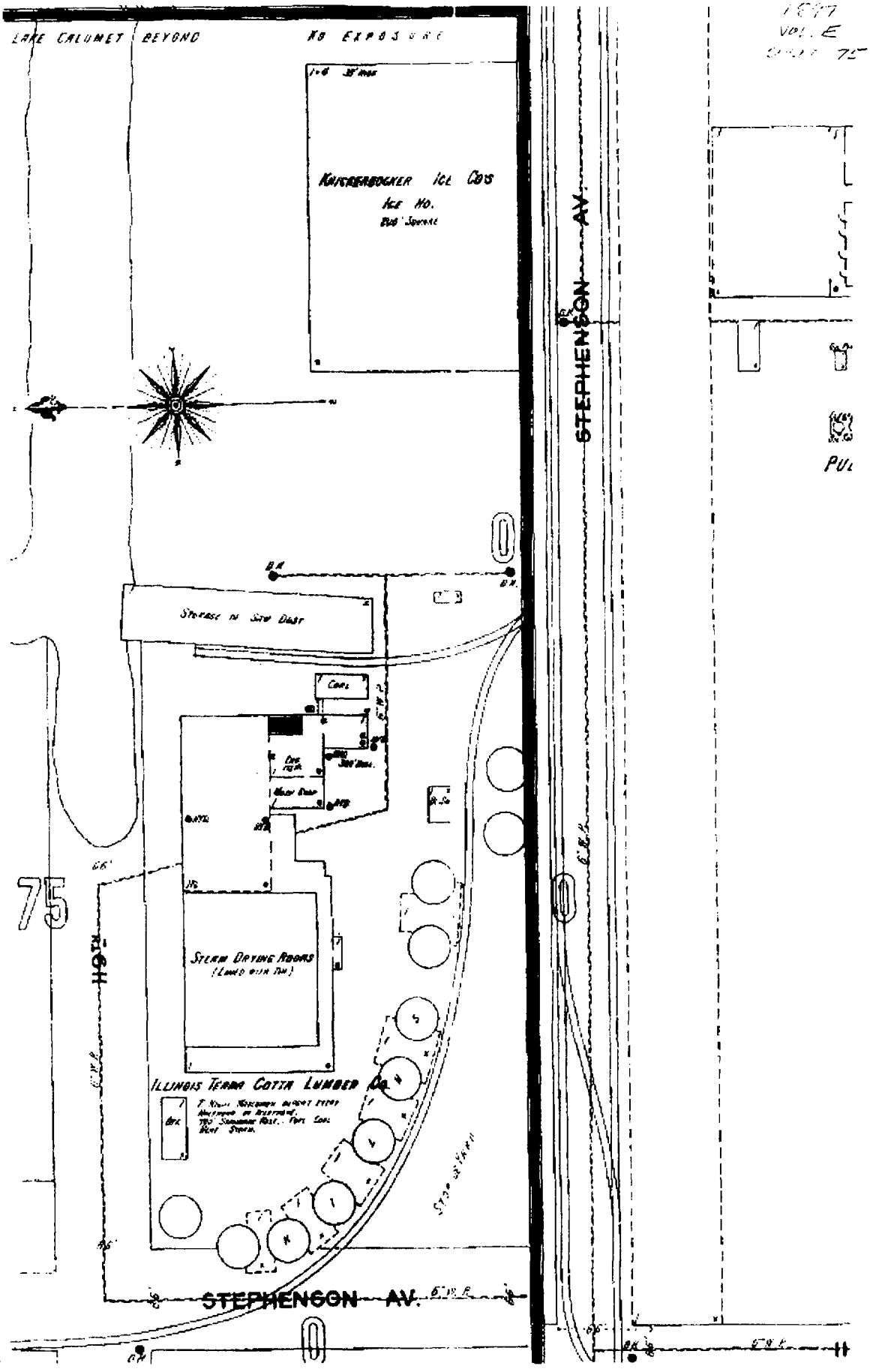
Lake Calumet Smelting Company

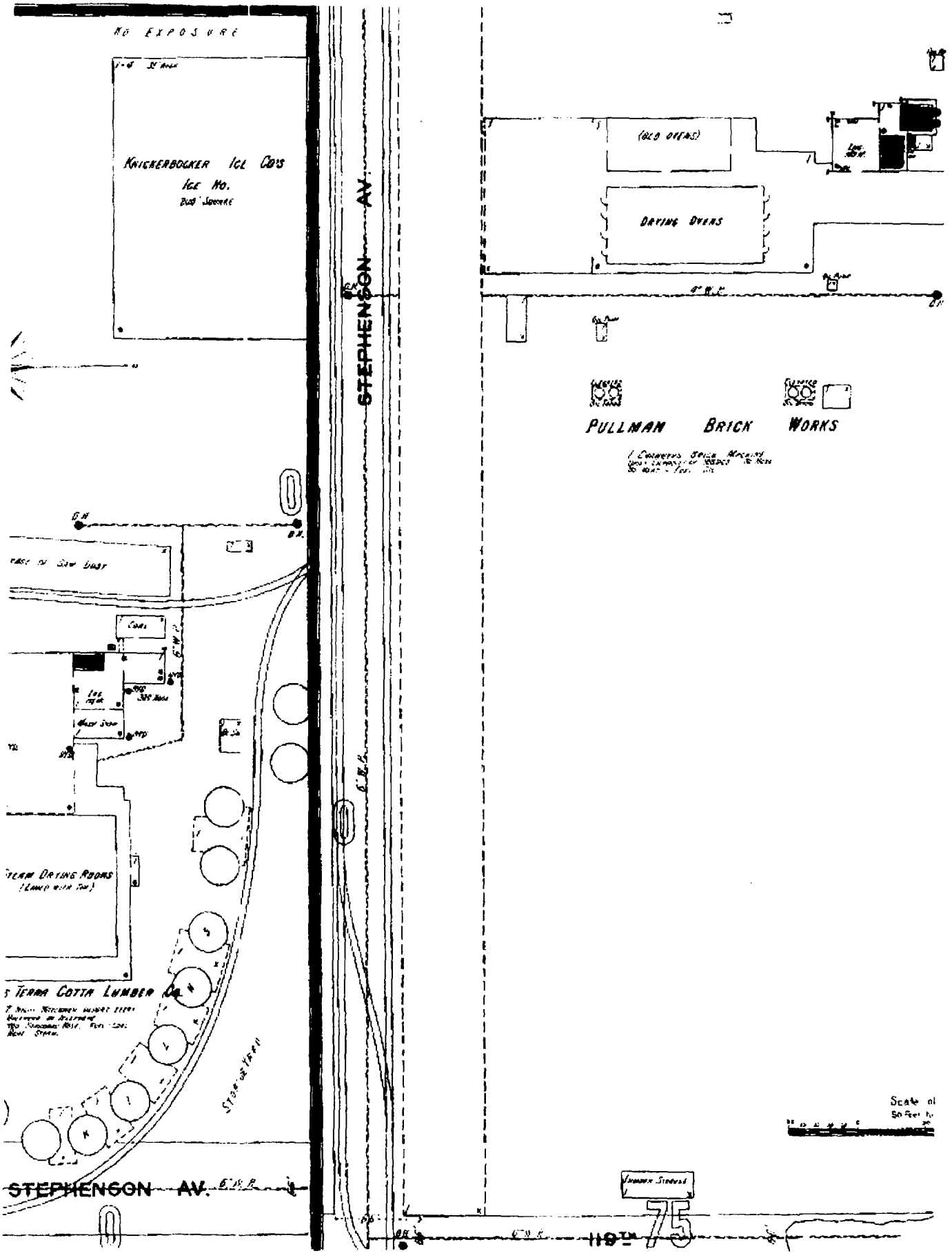
4 Mile Topographic Map

APPENDIX B

Sanborn Fire Insurance Maps
1897, 1936 – 1950

1897
SANBORN FIRE INSURANCE MAP




NO EXPOSURE
KNICKERBOCKER ICE CO'S
ICE HO.
STEPHENSON AV.
(OLD OFFICE)
DRYING OVENS
PULLMAN BRICK WORKS
STEAM DRYING ROOMS
TERRA COTTA LUMBER CO.
STEPHENSON AV.
119TH
75

1936 – 1950
SANBORN FIRE INSURANCE MAP